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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,434	01/24/2002	William Francis Alexander JR.	001.0055 (CE04453N)	8064

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EXAMINER

MULL, FRED H

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 10/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,434

Applicant(s)

ALEXANDER, WILLIAM FRANCIS

Examiner

Fred H. Mull

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Observations

1. The applicant has not pointed out any deficiencies in the statement of the examiner's understanding of the invention in section 2 of the previous action. The examiner interprets this as acknowledgment that this interpretation is correct.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuchar.

In regard to claims 1, 8-10,15, 20-22, Kuchar discloses a first antenna and a second antenna configured to receive an RF signal from the remote unit, said RF signal including a plurality of scattered rays produced by multipath scattering (section 1.1); a ray selector configured to identify a first ray from said scattered plurality of rays received at said first antenna and a second ray from said plurality of scattered rays received at said second antenna (sections 4.3.1 and 4.6.2); ESPRIT estimation of DOAs (section 4.3); a difference calculator configured to determine an amplitude difference between said first and second ray (section 4.6.2), and an angle estimator configured to calculate a DOA values based at least in part upon said ESPRIT DOA estimator (sections 4.3 and

4.6.2) and select one of said plurality of DOA values utilizing said amplitude difference (section 4.6.2, 2nd paragraph).

While Kuchar does not explicitly refer to the determination of phase differences, ESPRIT DOA estimation inherently involves determining phase difference between first and second rays.

Roy, the patent for ESPRIT, discloses the ESPRIT procedure includes determining phase difference between the first and second rays to determine DOAs (col. 4, lines 11-35).

The use of a secondary reference to show that a characteristic not disclosed in the primary reference is inherent is permitted under MPEP 2131.01(III).

In regard to claims 2 and 16, Kuchar further discloses that although his examples are described in terms of a uniform antenna spacing of one-half a wavelength, that a general antenna array may include antennas that are not arranged in a regular fashion (footnote, p. 1 of the Introduction). One of ordinary skill in the art will recognize that if you start with a regular array and start moving antennas a little bit this way and a little bit that way, some of the antennas will end up being spaced less than a wavelength apart and some will end up being spaced greater than a wavelength apart.

In regard to claims 3-4, Kuchar further discloses a third and fourth antenna configured to receive said RF signal including said plurality of scattered rays produced by multipath scattering (section 1.1; Fig. 1.2 on p. 4).

In regard to claims 5 and 17, Kuchar further discloses the communication system is a CDMA communications system (section 1.2).

In regard to claims 6 and 18, Kuchar further discloses said RF signal is an encoded spread-spectrum digital signal having a multiplicity of frequency and time overlapping coded signals from the remote unit and a plurality of remove units other than remote units, where Fig. 1.2 on p. 4 shows multiple users signals and CDMA signals are inherently encoded spread-spectrum digital signals (i.e. they are encoded with spreading codes).

In regard to claims 7 and 19, Kuchar further discloses said first ray and said second ray are prompt rays (section 4.6.2, 2nd paragraph).

In regard to claims 11-14 and 23-26, Kuchar further discloses phase calibration (sections 3.2 and 7.3)

3. The examiner also finds the following reference(s) relevant:

Røstbakken (paragraph under Fig. 5) and P.A. Murphy (p. 61, last paragraph), which discloses using the strongest multipath signal component as the direction to a mobile device.

Mizusawa, which discloses using the strongest multipath signal component as the direction to a mobile device (p. 25, 2nd paragraph) and the use of phase differences in DOA determination (section 2.2.2) in a CDMA system (title).

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

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Conclusion

4. This action is non-final as a result of the new rejection that was not in response to an amendment to the claims. All previous rejections are removed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

Fred H. Mull
Examiner
Art Unit 3662

fhm


THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600